

**IMPACT OF THE 40-HOUR METHODS OF TEACHING COURSE
ON FIRE INSTRUCTORS**

STRATEGIC MANAGEMENT OF CHANGE

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Abstract

The Houston Fire Department has struggled for many years with a methodology to disseminate new information and training to its personnel in 92 fire stations covering 660 square miles. The solution was the development of a District Training Officer Program utilizing the national standard 40-hour Methods of Teaching course designed by the Department of Transportation. The course was intended to prepare the officers for their new responsibilities as fire instructors. The problem was that the Houston Fire Department had never determined the value or impact of the Methods of Teaching course to new instructors as they prepare for their responsibilities. The purpose of this research project was to determine the value and impact of the national standard 40-hour Methods of Teaching course to the Houston Fire Department District Training Officers.

To determine a solution to the research problem, the evaluative research methodology was selected for application.

The research questions to be answered by this research project were:

1. What is the District Training Officer's perception of the value and impact of the Methods of Teaching course to the Houston Fire Department and its operations?
2. What is the District Training Officer's perception of the value and impact of the Methods of Teaching course to the District Training Officers?
3. What is the District Training Officer's perception of the value and impact of the Methods of Teaching course to the firefighters of the Houston Fire Department?
4. Would the District Training Officers who graduated from the Methods of Teaching course perceive a need for additional Methods of Teaching courses?

5. Would the District Training Officers who graduated from the Methods of Teaching course recommend the District Training Officer position to another firefighter and Fire Department?

As a result of this research project, it was determined that the 40-hour Methods of Teaching course was of significant value and impact in the preparation of Houston Fire Department officers transitioning from station officer to fire instructor, but the course does not meet all the challenges of the occupation. The post-course results indicated that the value of the course increased an average of 32.5% to the District Training Officers from the pre-course scores, and that the average value was placed at 97.6 on a 100-point scale.

As a result of this research, several recommendations for future study were developed. The data indicated apprehension for the liabilities involved with teaching and suggested that evaluation standards for instructors who continue teaching over a lifetime should be developed, possibly through legislative changes involving the instructor's certifying credential by the Texas Commission on Fire Protection Personnel. These and other concerns could not be addressed in the time available in the current course, and it was determined that future continuing education courses and research are required for the new instructors to continue their professional development and remain current in the state-of-the-art methods of teaching.

Table of Contents

	Page
Abstract	i
Table of Contents	iii
Introduction.....	1
Background and Significance	3
Literature Review.....	5
Procedures	6
Results	9
Discussion.....	11
Recommendations	15
Reference List	19
Appendix.....	20

Introduction

For many years the Houston Fire Department has struggled with a methodology to provide continuing education training to its 3100 members. The logistics of disseminating new information and technology through training classes to a department covering 660 square miles with 92 fire stations is substantial. The problem is compounded by the approximately 250,000 annual emergency responses of the department's personnel. The department's solution was a District Training Officer program in which each of the 20 districts would have one designated officer per shift who would serve as the District Training Officer. I was selected to prepare 40 of the new District Training Officers for their responsibilities by teaching the national standard 40-hour Methods of Teaching course designed by the Department of Transportation. The course would provide the basis for the District Training Officers' certification by the Texas Commission on Fire Protection Personnel as Intermediate Instructors and provide the foundation upon which the skills and knowledge to successfully teach the Houston Fire Department's 3100 personnel would be developed.

The changes required of the selected personnel in the transition from station officer to District Training Officer were complex. New philosophies, knowledge, and skills would have to be cultivated and biases based on prior training classes would have to be overcome in order for the officers to become successful teachers and fire instructors.

When considering the challenges faced to ensure the transition from station officer to district training officer, one event stood out as the determining factor in the success or failure of the project. What impact would the Methods of Teaching course have on the new district training officers? The problem was that the Houston Fire

Department had never determined the value or impact of the Methods of Teaching course to new instructors preparing for the responsibilities of the role of a fire instructor.

The purpose of this applied research project was to determine the value and impact of the Methods of Teaching course to the Houston Fire Department District Training Officers.

To determine a solution to the research problem, the evaluative research methodology was selected for application.

The research questions to be answered by this research project were:

1. What is the District Training Officer's perception of the value and impact of the Methods of Teaching course to the Houston Fire Department and its operations?
2. What is the District Training Officer's perception of the value and impact of the Methods of Teaching course to the District Training Officers?
3. What is the District Training Officer's perception of the value and impact of the Methods of Teaching course to the firefighters of the Houston Fire Department?
4. Would the District Training Officers who graduated from the Methods of Teaching course perceive a need for additional Methods of Teaching courses?
5. Would the District Training Officers who graduated from the Methods of Teaching course recommend the District Training Officer position to another firefighter and fire department?

Background and Significance

The Houston Fire Department has routinely supported fire instructor preparation by sending instructor candidates to the national standard 40-hour Methods of Teaching course. This action was based on the Houston Fire Department's desire to exceed the minimum standards of the Texas Commission on Fire Protection Personnel for Basic Fire Instructor certification. These standards require as a minimum, the completion of the 8-hour Methods of Teaching course. Completion of a Texas Commission on Fire Protection Personnel approved 40-hour Methods of Teaching course enables the graduate to apply for the higher level Intermediate Fire Instructor credential instead of the Basic Fire Instructor credential.

Another factor influencing the actions of the Houston Fire Department is the Texas Commission on Fire Protection Personnel guidelines for continuing education. Credit hours from courses taught by instructors who are not certified to a minimum level of Basic Fire Instructor may not be applied toward the annual continuing education requirements. Failure to meet the annual requirements for continuing education will result in decertification as a firefighter in Texas and immediate removal from any emergency response apparatus. Because of these requirements and desires, the Houston Fire Department has routinely sent personnel to the 40-hour Methods of Teaching course in order to insure compliance with the standards and a high level of professionalism by its personnel.

When considering the cost of the course and a average personnel salary of \$20.00 per hour for the length of the course, the estimated cost to the department is \$16,000.00 for every 20 students enrolled in the Methods of Teaching course. If replacement

personnel for the students attending the course are considered, the cost doubles to over \$32,000.00 per course. While these costs are significant, the most important expenditures may occur after the new instructor completes the course. Upon completion of the course, the new instructor is given courses and materials to teach. The department routinely entrusts the new instructor with its personnel for training for the remainder of the instructor's career. If the instructor teaches just two 4-hour training classes per month to an average district of 40 firefighters, the estimated cost in attendees' salaries alone is \$6,400.00 per month. In one year, the department has entrusted each new instructor with \$76,800.00 in personnel costs. Over a 5-year period, the 20 members of the Methods of Teaching course have been entrusted with \$7,680,000.00 in personnel salaries if they teach just two 4-hour classes per month.

Although these costs are staggering, the most potentially damaging risks are related to the impact of what the instructor teaches or fails to teach. When questions involving student evaluation techniques and instructor evaluation methods currently in use are analyzed, the potential liability to the fire department is significantly compounded. With fire service negligence and liability under constant scrutiny from the community, the impact of training classes and the performance of fire service personnel are more important than ever. In today's court cases, the questions of competency and training backgrounds are routine areas of investigation by the legal profession. Unfortunately, it has been the practice of the Houston Fire Department, and most other fire departments, to consider the 40-hour Methods of Teaching course not only as the sole requirement for initial certification to teach in the fire service, but also as the only requirement to provide a lifetime of continuing instruction to the fire service. There are

no requirements in the state of Texas, nor the Houston Fire Department, for continuing education in teaching methodology to maintain the instructor's credentials to teach, nor any evaluations of instructor competency after initial certification.

Since the 40-hour Methods of Teaching course has historically been the fire instructor's only exposure to the teaching profession, what is the value and impact of the course to the Houston Fire Department, the new instructor, and the future students? What is the value and impact of the 40-hour Methods of Teaching course as the catalyst for the transition and change from station officer to district training officer? In the Houston Fire Department, the research to determine the impact and value of the 40-hour Methods of Teaching course has never been investigated.

Literature Review

In reviewing the results of this research study compared to previous work, I discovered no previous efforts had been undertaken to determine the effectiveness of the 40-hour Methods of Teaching course. Through numerous comprehensive searches utilizing known data bases such as ERIC 1992-97, ERIC 1982-1991, Education Abstracts 1983-, Dissertation Abstracts 1861-, Medline, the University of Houston's library, the National Fire Academy's Learning Resource Center, and the World Wide Web, no previous literature relating to the subject was discovered. Experts such as Benjamin Warren (1998), routinely recommended the same material as the basis for instructor preparation, but had not analyzed the effectiveness of the material in achieving the desired outcomes. On May 26, 1998, I interviewed Mr. Jeremy Cotton of the Department of Transportation, originator of the course, who informed me that no previous research

was conducted and published by the Department of Transportation on the effectiveness of the 40-hour Methods of Teaching course. (J. Cotton, personal communication, May 26, 1998).

Procedures

In order to determine the value and impact of the 40-hour Methods of Teaching course to the Houston Fire Department, and the new district training officers, the evaluative research methodology was selected. A survey instrument was developed to determine the value of the Methods of Teaching course to the candidates selected for district training officers, their view of the value of the course to the Houston Fire Department, and their view of the value of the course to the firefighters of the department.

The students were preselected for the course by the Houston Fire Department using criteria that the selected candidate must have held the rank of Captain or Senior Captain for at least two years prior to the course, and must be assigned to the district upon which they would serve as the district training officer. One district training officer per district and shift was selected. Since the Houston Fire Department has 20 districts and 4 shifts, a total of 80 district training officers were selected for the program. Upon completion of the course and assumption of the duties, the district training officers would be paid a monthly stipend of \$250.00.

The students selected represented a random cross section of the population of officers of the Houston Fire Department under these guidelines, without any known significant differences between districts, shifts, or groups. There were no prerequisites of

education, Methods of Teaching coursework, nor previous teaching experiences for entrance into the course. I conducted the 40-hour Methods of Teaching course for 40 of the 80 selected candidates.

The initial group of 20 students was assigned to attend the 40-hour Methods of Teaching course conducted from February 23, 1998 through February 28, 1998. The course was conducted using a schedule of 4 ten-hour days from 7:00 am until 5:00 p.m. One absence occurred, with 19 students attending the course. All 19 students completed both the pre-course and post-course surveys. This group consisted of selected officers of the "C" and "D" shifts of the Houston Fire Department.

The survey was administered as the first item of business on the first day of the course. This was accomplished in order to insure that there was no biasing of the candidates' views of the course. The instructions for completion of the survey informed the students that the survey would in no manner affect their course grade, nor their participation in the District Training Officer Program. They were also informed that the purpose of the survey was educational research in nature, and would not be viewed by anyone in the Houston Fire Department other than myself. After the survey was administered, the 40-hour course was conducted. Upon completion of the course, the same survey instrument was readministered to the same group of students. The results of the difference in the two measurements was used to evaluate the impact of the 40-hour Methods of Teaching course on this group of students.

For validation, reliability, and comparative purposes, the entire procedure was repeated the following week of March 2, 1998 through March 5, 1998, with the second set of 21 students. For this group of students, 2 absences occurred, resulting in 19

students attending the course. All 19 students completed both the pre-course and post-course surveys. This group consisted of selected officers of the “A” and “B” shifts of the Houston Fire Department. The same instructions and procedures were systematically applied, with the results of the difference in the two measurements used to evaluate the impact of the 40-hour Methods of Teaching course on this group of students.

A post-course total average for each question was determined. This average was calculated by combining the two groups’ post-course responses to each question and finding the numerical average of the 38 responses based upon a 100 point scale. By combining the two groups, statistical reliability of the data was increased as the sampling size increased.

The limitations of this research project were the following:

- 1). The population selected was statistically small in number and influenced by the selection criteria used by the Houston Fire Department for entrance into the District Training Officer Program. The population was limited to officers of the Houston Fire Department who had at least two years in grade from the ranks of Captain and Senior Captain. While not a pure random sampling in statistical procedures, the group was representative of the officers of the Houston Fire Department.
- 2). The population selected by the Houston Fire Department for entrance into the District Training Officer Program was limited by the requirement that the selected candidate must be assigned to the district that he would serve in. As such, no two candidates assigned to the same district and shift could be selected for the Methods of Teaching course.

Results

The result of this research project was to determine the solutions to five research questions. The results are presented by group, with group #1 completing the course on February 28, 1998 and group #2 completing the course on March 5, 1998. The results listed were determined by measuring the pre-course averages and post course averages on the survey questions and then calculating the percentage of increase or decrease in the responses between the pre-course and post-course surveys.

The third measurement listed is the average numerical response by all 38 post-course respondents to the survey questions, based on a 100 point scale.

The first question to be determined was "What is the District Training Officer's perception of the value and impact of the Methods of Teaching course to the Houston Fire Department and it's operations?" This question was addressed in survey questions #4 and #5. The following results represent the differences between the pre-course survey and the post-course survey, along with the average post-course response by the combined total group:

Group #1 Results:	Group #2 Results:	Total Average:
Question #4= +18%	Question #4= +08%	91.1%
Question #5= +17%	Question #5= +14%	84.5%

The second area of research was "What is the District Training Officer's perception of the value and impact of the Methods of Teaching course to the District Training Officers?" This question was addressed in survey questions #1, #2, and #3. The

following results represent the differences between the pre-course survey and the post-course survey, along with the average post-course response by the combined total group:

Group #1 Results:	Group #2 Results:	Total Average:
Question #1= +25%	Question #1= +40%	97.6%
Question #2= +31%	Question #2= +42%	91.8%
Question #3= +06%	Question #3= +05%	78.7%

The third area of research was "What is the District Training Officer's perception of the value and impact of the Methods of Teaching course to the firefighters of the Houston Fire Department?" This question was addressed in survey questions #6, and #7. The following results represent the differences between the pre-course survey and the post-course survey, along with the average post-course response by the combined total group:

Group #1 Results:	Group #2 Results:	Total Average:
Question #6= +22%	Question #6= +22%	87.1%
Question #7= +14%	Question #7= +15%	56.6%

The forth area of research was "Would the District Training Officers who graduated from the Methods of Teaching course perceive a need for additional Methods of Teaching courses? This question was addressed in survey question #10. The following results represent the differences between the pre-course survey and the post-course survey, along with the average post-course response by the combined total group:

Group #1 Results:	Group #2 Results:	Total Average:
Question #10= +23%	Question #10= +34%	94.5%

The fifth area of research was "Would the District Training Officers who graduated from the Methods of Teaching course recommend the district training officer position to another firefighter and Fire Department? This question was addressed in survey questions #8 and #9. The following results represent the differences between the pre-course survey and the post-course survey, along with the average post-course response by the combined total group:

Group #1 Results:	Group #2 Results:	Total Average:
Question #8= +27%	Question #8= +29%	91.6%
Question #9= +17%	Question #9= +16%	81.8%

Discussion

In reviewing the results of this research study compared to previous work, I discovered no previous efforts had been undertaken to determine the effectiveness of the 40-hour Methods of Teaching course. Through numerous comprehensive searches utilizing known data bases such as ERIC 1992-97, ERIC 1982-1991, Education Abstracts 1983-, Dissertation Abstracts 1861-, Medline, the University of Houston's library, the National Fire Academy's Learning Resource Center, and the World Wide Web, no previous literature relating to the subject was discovered. Experts such as Benjamin Warren (1998), routinely recommended the same material as the basis for instructor preparation, but had not analyzed the effectiveness of the material in achieving the desired outcomes. On May 26, 1998, I interviewed Mr. Jeremy Cotton of the Department of Transportation, originator of the course, who informed me that no previous research was conducted and published by the Department of Transportation on the effectiveness of

the 40-hour Methods of Teaching course. (J. Cotton, personal communication, May 26, 1998).

My interpretation of the results of the research was that the 40-hour Methods of Teaching course is an excellent tool for increasing the students' awareness of the teaching profession and its standards, since each question evaluated scored significantly higher on the post-course survey than on the pre-course survey. While the research suggests that the coursework does prepare the students for entrance into the teaching profession, the Methods of Teaching course does not meet all the challenges the graduate should expect to encounter in the occupation, nor does it allow for all the responsibilities of the fire instructor to be adequately discussed. In addition, the students need more time to practice the preparation and presentation skills than the course allows for.

The District Training Officers indicated that the 40-hour Methods of Teaching course was of substantial value to both themselves and The Houston Fire Department. It was their belief that the course was of greater value to the District Training Officers than to the firefighters of the Houston Fire Department. This may have been because the officers were the individuals who would be conducting the training courses, and the firefighters were viewed as the students. It is my opinion that the value of competent instructors to the students should not be taken lightly nor overlooked.

The officers who graduated from the course also indicated that additional educational coursework is required to meet the challenges of the fire instructor position, and expressed a 94.5% willingness to pursue further education on the subject. This indicates that the students were striving to become excellent instructors and understood that there was considerably more to teaching excellence than the 40-hour course could

cover. This finding may suggest that continuing education requirements for fire instructors would be supported.

One of the major findings of this study was that the District Training Officers are very concerned with the liability issues involved with teaching. As a result of the liabilities in teaching, many instructors were hesitant to recommend the District Training Officer position to other firefighters. The legal liabilities of teaching were not understood nor expected by the students. This caused a great deal of discussion and stress in the classroom and was reflected by the survey results on questions #3 and # 9. The legal liabilities of teaching should be explained prior to the selection of candidates for entrance into the course. In spite of the liabilities to the individual firefighters selected to become fire instructors, 91.6% of the course graduates still believe it is a positive program for other fire departments to start.

I was very surprised to find that a course that was based solely on teaching could generate such enthusiasm and interest by firefighters. The fact that 97.6% of the students indicated that the course was of value to them and 91.1% felt that the District Training Officer Program was of value to the Houston Fire Department was very gratifying.

One of the most surprising results of this study was the consistency in responses by the two groups. The variance was less than 3% on six of the ten questions surveyed. With a statistically small sampling population, I would have anticipated a greater variance in the results, but was satisfied with the reliability of the evaluation instrument.

There were several implications to the Houston Fire Department that were discovered as a result of this study. One of the implications from the study was that the officers were somewhat reluctant (81%) to recommend the position to other firefighters,

primarily due to the teaching liabilities. If this trend were to continue, the Houston Fire Department could find itself short of the required number of instructor candidates to select from in the future. The students expressed a great deal of interest in locating insurance coverage to reduce their risk while in the performance of their duties as an instructor. At this time, it is unknown if any Houston Fire Department instructors carry individual liability insurance protection for their teaching responsibilities.

Although 91.6% recommended that other fire departments start a program, I was surprised to find that the officers of the Houston Fire Department did not feel that the firefighters would be enthusiastic about the District Training Officer Program (56.6%). I feel that this is an area that would warrant further research, as the implication to the Houston Fire Department is that the officers do not feel that the firefighters are interested in training courses and furthering their knowledge. The perception this issue creates should be addressed as soon as practical, as it would be of concern to the elected officials of the city, the management of the Houston Fire Department, the union, and could impact the Houston Fire Department's professional image with the citizens.

Another implication of concern to the Houston Fire Department is that a very low percentage of the students came to the course with any enthusiasm (67%). I feel that this indicates that the training currently received by the officers of the Houston Fire Department is not highly valued. One of the results of this study was that both groups' post-course enthusiasm for attending the course rose in excess of 30 %, which indicates that substantial improvement is possible.

One of the most important implications of the study results to the Houston Fire Department is that the organization is entrusting its most important asset, its firefighters,

to a group of new instructors who believe that they are as well prepared for the challenges of the role of the fire instructor as the 40-hour Methods of Teaching course allows, but who also need additional continuing education and resources to support them. I suggest that the organization is fortunate to have so many dedicated individuals who are striving for excellence in their changing role, and that the organization has an obligation to find a methodology to increase the level of support provided above previous efforts. By improving the education to the instructor, we can improve the education provided by the instructor. This is the key to organizational efficiency and effectiveness through total quality management.

Recommendations

Additional coursework to further enhance the performance of the new fire instructors is needed. The areas needing expanded coverage include the use of visual aids, computers, and additional practice in evaluation techniques. Further development of platform skills and presentation skills are also required. I would recommend that the new instructors receive additional instruction in the strategies and tactics of education.

Another recommendation is that the new instructors receive continuing education and development through educational seminars and conferences. This will allow the new instructors to remain current in the latest trends in education and develop a network of professional educators as resources to call upon if needed.

One of the most important recommendations developed from the study is in the area of liability. I believe that further coursework and education on the legal responsibilities and liabilities of instruction are required for both the new fire instructors

and the management of the Houston Fire Department. One method to solve this problem is to schedule and support attendance at conferences, seminars, and in-house training courses provided by the city attorney.

The liability concerns could also be reduced by providing liability insurance through professional organizations such as the Texas Association of Fire Educators or the Texas Junior College Teachers Association.

Another method to reduce the legal liabilities to both the fire instructors and the Houston Fire Department would be to develop a system of checks and balances to ensure that the course lesson plans were properly developed and adhered to, as well as verifying that appropriate evaluation techniques were utilized. A documentation and recordkeeping verification procedure should also be included in this system.

I would also recommend that all instructors increase their awareness of the liabilities of educational malfeasance through the study of legal cases and decisions. In addition, the city attorney should conduct meetings with the fire instructors on a regular basis to keep the instructors current regarding changes in educational law. These meetings should supplement an ongoing educational program of educational liability courses for the entire instructional faculty of the Houston Fire Department.

Another area that merits change is the Texas Commission on Fire Protection Personnel requirements to obtain and maintain the credentials for Fire Instructor certification. Not only should continuing education be required, but continuing evaluation for competency should be required. I would suggest a reevaluation process every three years to determine competency to maintain the Fire Instructor credential to teach. In addition, the Texas Commission on Fire Protection Personnel should require 40

hours of annual continuing education training in the area of Methods of Teaching for all fire instructors.

There are several follow-up studies that are recommended. A study is needed to determine why the entry level of enthusiasm for a Houston Fire Department training class was so low. In conjunction with this study, I would recommend that a survey be developed to determine the questions "What is the level of quality of the current Houston Fire Department training courses?" and "How are the training courses viewed by the members of the Houston Fire Department?"

A second follow-up study should be conducted to determine the question of "How many of the current Houston Fire Department instructors have liability protection insurance?" A policy and procedure regarding Houston Fire Department instruction, including waivers and acknowledgment forms, should be developed.

A third follow-up study is needed to determine the effectiveness of these two groups of fire instructors from the perspective of their students. I would recommend a comparison of the quality of instruction provided by these two groups of fire instructors and similar groups of fire instructors who attended the 40-hour Methods of Teaching course from a different instructor. The purpose of the study would be to validate the effectiveness of the course and determine the influence of the individual instructor who taught the course.

One final recommendation that occurred as a result of this study is that the requirements to teach the 40-hour Methods of Teaching course should be increased. Currently, the only requirement is that the instructor must have completed the same course and must have taught the course at least once under the supervision of a Texas

Commission on Fire Protection Personnel certified Methods of Teaching instructor. It is my recommendation that the minimum requirement to teach the 40-hour Methods of Teaching course should be a Bachelors degree in the education discipline.

As a result of this course, the Houston Fire Department and the District Training Officers in particular, are much more aware of the roles and responsibilities of the fire instructor and the importance of the 40-hour Methods of Teaching course. Prior to the completion of these two courses, it was the opinion of many of the participants that they would be involved in another boring training course and were motivated only by the need to obtain the required credential to qualify for the incentive pay that went along with the title of District Training Officer. What resulted was an awareness of the roles and responsibilities of a fire instructor, including the strategies and tactics that lead to a successful education, not just the presentation of information and facts.

Reference List

- Zikmund, William G. (1984). Business Research Methods. Orlando, FL: The Dryden Press.
- Warren, Benjamin. (1998). An Officer and an Instructor. Fire Chief, 42, 48-54.

9. How strongly would you recommend the District Training Officer position to another firefighter?
- 1 2 3 4 5 6 7 8 9 10
LOW HIGH
10. How strongly would you consider taking other teaching-related courses?
- 1 2 3 4 5 6 7 8 9 10
LOW HIGH